

What is claimed is:

1. A short range radio communication method, in which a DSRC (Dedicated Short Range Communication) that is a short range radio communication used for an ETC (Electronic Toll Collection) that is a non-stop toll collection system is applied, and roadside antennas that are provided at a roadside are continuously arranged, and time sharing operation is performed by synchronizing sending timing of a communication frame in all of said roadside antennas, comprising:

10 a step for receiving a communication frame transmitted from an adjacent roadside antenna during the communication with one of said roadside antennas in an on-vehicle device which is a radio set mounted on a vehicle and performs the communication with said roadside antennas.

15 2. The short range radio communication method according to claim 1,

wherein said step comprises:

20 an FCMS detecting step for detecting an FCMS (Frame Control Message Slot) of the communication frame transmitted from said adjacent roadside antenna at stopping timing of the communicating roadside antenna; and

a step for switching the communication from the communicating roadside antenna to the adjacent roadside antenna on the basis of results detected by said FCMS detecting step.

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wherein said roadside antennas are continuously arranged so that part of the effective communication range of each of said roadside antennas is overlapped onto the effective communication range of the adjacent roadside antenna, and said step is performed when said on-vehicle device exists in an overlapped part of said effective communication ranges.

wherein said time sharing operation is performed by practicing synchronization among all DSRC control steps.

an on-vehicle device which is a radio set mounted on a vehicle and performs the communication with said roadside antennas, wherein said on-vehicle device includes means for receiving a communication frame transmitted from an adjacent roadside

antenna during the communication with one of said roadside antennas.

6. The short range radio communication system according to claim 5,

5 wherein said means comprises:

FCMS detecting means for detecting an FCMS (Frame Control Message Slot) of the communication frame transmitted from said adjacent roadside antenna at stopping timing of the communicating roadside antenna; and

10 means for switching the communication from the communicating roadside antenna to the adjacent roadside antenna on the basis of results detected by said FCMS detecting means.

7. The short range radio communication system according to claim 5,

15 wherein said roadside antennas are continuously arranged so that part of the effective communication range of each of said roadside antennas is overlapped onto the effective communication range of the adjacent roadside antenna, and said means receives the communication frame from the adjacent roadside
20 antenna when said on-vehicle device exists in an overlapped part of said effective communication ranges.

8. The short range radio communication system according to claim 5,

25 wherein each of roadside devices provided corresponding to said roadside antennas includes a DSRC control section for performing DSRC protocol processing, and said time sharing

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operation is performed by practicing synchronization among all DSRC control sections.

9. The short range radio communication system according to claim 5,

5 wherein the communication contents which are concurrently taken in a communication frame from the communicating roadside antenna and a communication frame from the adjacent roadside antenna are mutually different communication contents.

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